

INTERSECTION OPERATION

THE INTERSECTION IS TO OPERATE IN A NEMA FOUR-PHASE FULL TRAFFIC ACTUATED MODE. THE MD 450 APPROACHES WILL RUN CONCURRENTLY. AN EXCLUSIVE/PERMISSIVE LEFT TURN MOVEMENT WILL BE PROVIDED FOR EASTBOUND MD 450.

BECAUSE IT WILL BE NECESSARY TO MAINTAIN OPERATION OF THE EXISTING INTERSECTION DURING CONSTRUCTION OF THE NEW RAMP 'A', THE NEW SIGNAL EQUIPMENT (WITH THE EXCEPTION OF DETECTOR LOOPS ON PROPOSED RAMP 'A') MUST BE FULLY INSTALLED AND OPERATIONAL BEFORE THE EXISTING SIGNALS CAN BE REMOVED. THE INTERSECTION WILL OPERATE ON AN INTERIM TWO-PHASE MODE DURING THE CONSTRUCTION OF RAMP 'A'.

AN EIGHT (8) PHASE, FULL TRAFFIC ACTUATED CONTROLLER WITH SIX (6) TWO-CHANNEL LOOP DETECTOR AMPLIFIERS WITH TIME DELAY OUTPUT, INTERSECTION MONITOR WITH HARNESS, TELEMETRY MODULE AND SUPPRESSION BOARD, HOUSED IN SIZE 6 BASE-MOUNTED CABINET, IS TO BE INSTALLED AT THIS LOCATION.

CONSTRUCTION DETAILS

A. INSTALL BASE MOUNTED NEMA SIZE 6 CABINET AND CONTROLLER WITH ALL NECESSARY EQUIPMENT (NOTE: TWO 4-INCH 90-DEGREE [SCHEDULE 40] PVC BENDS AND ONE 2-INCH 90-DEGREE [SCHEDULE 80] PVC BEND).

B. INSTALL 27 FT. STEEL POLE WITH SINGLE 64 FT. MAST ARM, 15 FT. LUMINAIRE ARM AND 250 W HPSV LUMINAIRE, VEHICLE SIGNAL HEADS AND PEDESTRIAN SIGNAL HEAD AS SHOWN AND ALL NECESSARY EQUIPMENT FOR AN OVERHEAD TYPE B-14 ELECTRICAL SERVICE (NOTE: ONE 3-INCH 90-DEGREE [SCHEDULE 40] PVC BEND AND ONE 2-INCH, 90-DEGREE [SCHEDULE 80] PVC BEND) (USE FOUR 2-INCH X 90-INCH ANCHOR BOLTS).

C. INSTALL 27 FT. STEEL POLE WITH TWIN 50 FT. AND 60 FT. MAST ARMS, 15 FT. LUMINAIRE ARM AND 250W HPSV LUMINAIRE, VEHICLE SIGNAL HEADS AND SIGNS AS SHOWN. (NOTE: ONE 2-INCH, 90-DEGREE [SCHEDULE 40] PVC BEND) (USE FOUR 2-INCH X 90-INCH ANCHOR BOLTS)

D. INSTALL 10 FT. STEEL PEDESTAL POLE WITH PEDESTRIAN SIGNAL HEAD (NOTE: ONE 2-INCH, 90-DEGREE [SCHEDULE 40] PVC BEND).

E. INSTALL 3-INCH POLYVINYL CHLORIDE (SCHEDULE 40) ELECTRICAL CONDUIT - TRENCHED.

F. INSTALL 6 FT X 6 FT VEHICLE LOOP DETECTOR (3 TURNS).

G. INSTALL 6 FT. X 30 FT. QUADRUPOLE VEHICLE LOOP DETECTOR (2-4-2 TURNS).

H. INSTALL HANDHOLE.

I. INSTALL 1-INCH LIQUID TIGHT NON-METALLIC CONDUIT FOR LOOP DETECTOR SLEEVE.

J. INSTALL 2-INCH POLYVINYL CHLORIDE (SCHEDULE 80) ELECTRICAL CONDUIT- TUNNELED.

K. INSTALL 2-INCH POLYVINYL CHLORIDE (SCHEDULE 40) ELECTRICAL CONDUIT- TRENCHED.

L. INSTALL 2-INCH POLYVINYL CHLORIDE (SCHEDULE 80) ELECTRICAL CONDUIT- SLOTTED.

M. INSTALL 2-INCH POLYVINAL CHLORIDE (SCHEDULE 80) CONDUIT-TRENCHED.

N. INSTALL 3-INCH POLYVINAL CHLORIDE (SCHEDULE 80) CONDUIT-PUSHED.

O. PROPOSED OVERHEAD ELECTRICAL SERVICE BY PEPCO.

P. EXISTING OVERHEAD ELECTRICAL SERVICE TO BE REMOVED BY PEPCO.

Q. USE EXISTING CONDUIT.

R. USE EXISTING HANDHOLE.

S. 24-INCH WHITE STOP LINE (BY OTHERS)

T. PREFORMED WHITE LEFT ARROW MARKING (BY OTHERS)

U. REMOVE EXISTING SINGLE MAST ARM SIGNAL POLE WITH POLE MOUNTED CABINET AND CONTROLLER AND THREE-SECTION SIGNAL HEADS.

V. REMOVE EXISTING BREAKAWAY PEDESTAL POLE AND THREE-SECTION OPTICALLY PROGRAMMED SIGNAL HEAD.

W. INSTALL 4-INCH POLYVINYL CHLORIDE (SCHEDULE 40) ELECTRICAL CONDUIT - TRENCHED.

WIRING DIAGRAM ELECTRICAL CABLE DETAILS

A.	2-CONDUCTOR CABLE #14 AWG (ALUMINUM SHIELDED).
B.	2-CONDUCTOR CABLE #14 AWG (ALUMINUM SHIELDED).
C.	2-CONDUCTOR CABLE #14 AWG (ALUMINUM SHIELDED).
D.	2-CONDUCTOR CABLE #14 AWG (ALUMINUM SHIELDED).
E.	2-CONDUCTOR CABLE #14 AWG (ALUMINUM SHIELDED).
F.	2-CONDUCTOR CABLE #14 AWG (ALUMINUM SHIELDED).
G.	2-CONDUCTOR CABLE #14 AWG (ALUMINUM SHIELDED).
H.	2-CONDUCTOR CABLE #14 AWG (ALUMINUM SHIELDED).
I.	2-CONDUCTOR CABLE #14 AWG (ALUMINUM SHIELDED).
J.	2-CONDUCTOR CABLE #14 AWG (ALUMINUM SHIELDED).
K.	2-CONDUCTOR CABLE #14 AWG (ALUMINUM SHIELDED).
L.	7-CONDUCTOR CABLE #14 AWG
M.	5-CONDUCTOR CABLE #14 AWG
N.	5-CONDUCTOR CABLE #14 AWG
P.	7-CONDUCTOR CABLE #14 AWG
R.	5-CONDUCTOR CABLE #14 AWG
S.	5-CONDUCTOR CABLE #14 AWG
T.	3-CONDUCTOR CABLE #14 AWG
U.	3-CONDUCTOR CABLE #14 AWG
V.	1-#6 BARE STRANDED COPPER WIRE
X.	3-WIRE #4 AWG COPPER TYPE THWN FOR POWER FEED
Y.	2-CONDUCTOR #12 AWG TRAY CABLE
Z.	2-CONDUCTOR #12 AWG TRAY CABLE

NOTE:
GROUND RODS WILL BE LOCATED
IN THE HANDHOLES CLOSEST TO
FOUNDATIONS.

LW LOOP WIRE #14 AWG IN 1/4 INCH FLEXIBLE TUBING

EQUIPMENT LIST

A. EQUIPMENT TO BE SUPPLIED BY SHA :

QUAN/UNIT DESCRIPTION

1 EA.	EIGHT (8) PHASE, FULLY ACTUATED SOLID STATE DIGITAL CONTROLLER AND INTERSECTION MONITOR WITH HARNESS, SIX (6) TWO-CHANNEL LOOP DETECTOR AMPLIFIERS, TELEMETRY MODULE AND SUPPRESSION BOARD, HOUSED IN A BASE-MOUNTED SIZE 6 CABINET, TO BE USED AS A FOUR (4) NEMA PHASE MODE CONTROLLER.
5 EA.	12" ONE-WAY, THREE-SECTION (R, Y, G) ADJUSTABLE TRAFFIC SIGNAL HEAD HAVING PROPER MAST ARM ADJUSTABLE BRACKET AND TUNNEL VISORS.
1 EA.	12", ONE-WAY, FIVE-SECTION (R, YA, Y, GA, G) ADJUSTABLE TRAFFIC SIGNAL HEAD HAVING PROPER MAST ARM ADJUSTABLE BRACKET AND TUNNEL VISORS.
1 EA.	12", ONE-WAY, TWO-SECTION (WK/DW) SYMBOLIC PEDESTRIAN SIGNAL HEAD WITH PROPER BRACKET FOR POLE MOUNTING.
1 EA.	COMBINATION 12" AND 8" 5-SECTION (R, YA, Y, GA, G) ADJUSTABLE TRAFFIC SIGNAL HEAD HAVING PROPER MAST ARM ADJUSTABLE BRACKET AND TUNNEL VISORS.
1 EA.	ROAD SIGN R10-12, "LEFT TURN YIELD ON GREEN SIGNAL" 36" X 42", MAST ARM MOUNT.
2 EA.	ROAD SIGN R3-5L LEFT ARROW "ONLY", 30" X 36", SPAN MOUNT.
1 EA.	ROAD SIGN D3-2, "ANNAPOLIS ROAD", VARIABLE BY 16".
1 EA.	12" ONE-WAY, THREE-SECTION (R, Y, G) ADJUSTABLE TRAFFIC SIGNAL HEAD WITH PROPER BRACKET FOR POLE MOUNTING.
1 EA.	12" ONE-WAY, TWO-SECTION (WK/DW) SYMBOLIC PEDESTRIAN SIGNAL HEAD WITH PROPER BRACKET FOR PEDESTAL MOUNTING.

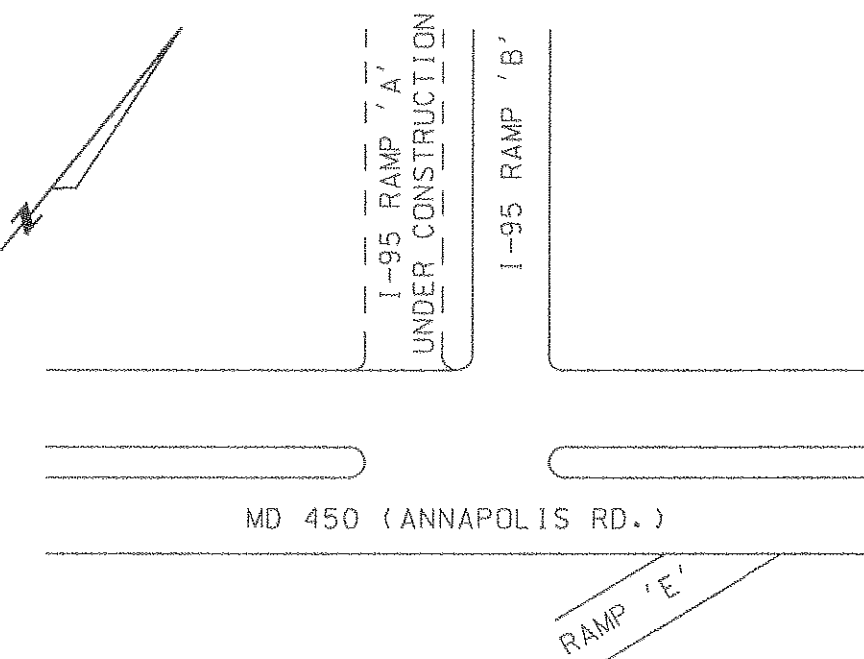
B. EQUIPMENT TO BE FURNISHED AND/OR INSTALLED BY THE CONTRACTOR:

QUAN/UNIT DESCRIPTION

39 L.F.	1" LIQUID TIGHT NON-METALLIC CONDUIT FOR LOOP DETECTOR SLEEVE
100 L.F.	2" PVC (SCHEDULE 40) CONDUIT-TRENCHED
260 L.F.	2" PVC (SCHEDULE 80) CONDUIT-SLOTTED-STEEL PLATES FOR MOT INCLUSIVE.
290 L.F.	3" PVC (SCHEDULE 40) CONDUIT-TRENCHED
25 L.F.	3" PVC (SCHEDULE 80) ELECTRICAL CONDUIT-PUSHED
20 L.F.	4" PVC (SCHEDULE 40) CONDUIT-TRENCHED
10 L.F.	2" PVC (SCHEDULE 80) CONDUIT-TUNNELED
9 EA.	HANDHOLE
2350 L.F.	2-CONDUCTOR CABLE #14 AWG (ALUMINUM SHIELDED)
200 L.F.	3-CONDUCTOR CABLE #14 AWG
790 L.F.	5-CONDUCTOR CABLE #14 AWG
440 L.F.	7-CONDUCTOR CABLE #14 AWG
370 L.F.	2-CONDUCTOR #12 AWG TRAY CABLE
1950 L.F.	LOOP WIRE #14 AWG IN 1/4 INCH FLEXIBLE TUBING
100 L.F.	COPPER WIRE #4 TYPE THWN
50 L.F.	COPPER WIRE #6 BARE STRANDED
775 L.F.	SAWCUT FOR SIGNAL LOOP DETECTOR
2 EA.	15' LUMINAIRE ARM
2 EA.	250 WATT HIGH PRESSURE SODIUM LUMINAIRE
8.5 C.Y.	CONCRETE FOUNDATION FOR SIGNAL EQUIPMENT
L.S.	REMOVAL OF EXISTING EQUIPMENT
3020 LBS	27 FT. STEEL SIGNAL MAST ARM SIGNAL POLE AND 50 FT MAST ARM.
4175 LBS	27 FT. STEEL TWIN MAST ARM SIGNAL POLE WITH 50 FT. AND 60 FT. MAST ARMS.
118 LBS	10 FT. PEDESTAL POLE
4 EA.	GROUND ROD - 3/4 INCH DIAMETER X 10 FT. LENGTH
1 EA.	CONTROL AND DISTRIBUTION EQUIPMENT (120/240V, ONE PHASE, THREE WIRE SYSTEM)
5 C.Y.	TEST PIT EXCAVATION
7 EA.	INSTALL TRAFFIC SIGNAL HEAD - MAST ARM MOUNT.
1 EA.	INSTALL TRAFFIC SIGNAL HEAD - POLE MOUNT
1 EA.	INSTALL PEDESTRIAN SIGNAL HEAD - POLE MOUNT
1 EA.	INSTALL PEDESTRIAN SIGNAL HEAD - PEDESTAL MOUNT.
36 S.F.	INSTALL SHEET ALUMINUM SIGN.
1 EA.	INSTALL BASE MOUNTED CABINET.
1 EA.	USE EXISTING PLAN ON DISK AND AS BUILT

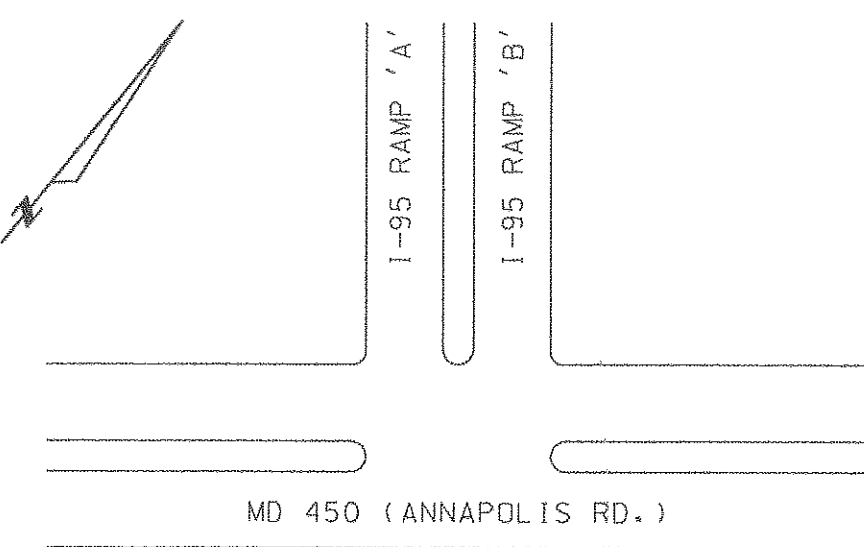
PHASE SEQUENCE CHART
INTERIM OPERATION DURING
CONSTRUCTION OF RAMP 'A'

	1	2	3	4	5	6	7	8	9	10	
PHASE 1 & 6			G	R	R	DARK	DARK	DARK	DARK	DARK	
PHASE 1 & 6 CHANGE			G	R	R	DARK	DARK	DARK	DARK	DARK	
PHASE 2 & 6	G	G	G	G	G	DARK	DARK	DARK	DARK	DARK	
PHASE 2 & 6 CHANGE	G	G	G	Y	Y	DARK	DARK	DARK	DARK	DARK	
FLASHING OPERATION	FL/Y	FL/Y	FL/Y	FL/Y	FL/Y	DARK	DARK	DARK	DARK	DARK	

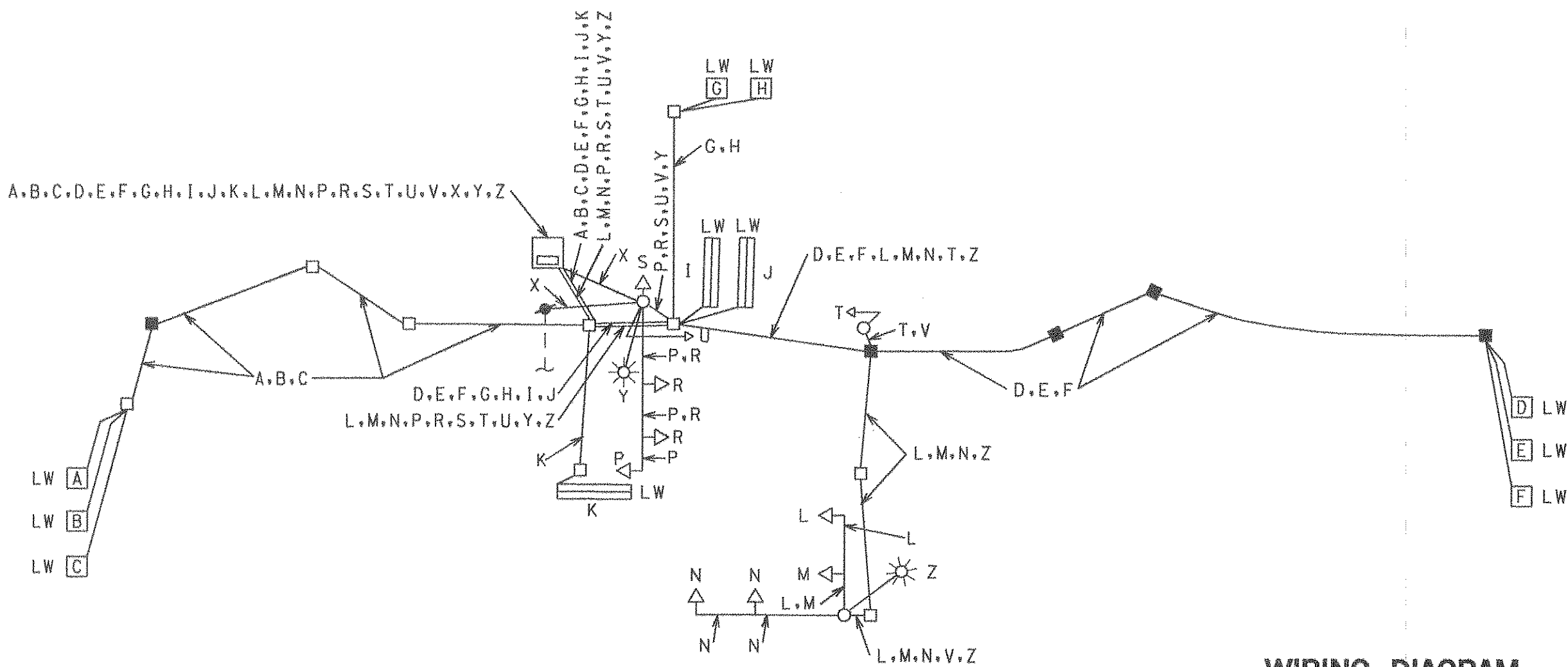


PHASE SEQUENCE CHART

	1	2	3	4	5	6	7	8	9	10	
PHASE 1 & 6			G	R	R	R	R	R	DW	DW	
PHASE 1 & 6 CHANGE			G	R	R	R	R	R	DW	DW	
PHASE 2 & 6	G	G	G	G	G	R	R	R	WK	WK	
PED CLEAR	G	G	G	G	G	R	R	R	FL/DW	FL/DW	
PHASE 2 & 6 CHANGE	Y	Y	Y	Y	Y	R	R	R	DW	DW	
PHASE 4	R	R	R	R	R	G	G	G	DW	DW	
PHASE 4 CHANGE	R	R	R	R	R	Y	Y	Y	DW	DW	
FLASHING OPERATION	FL/Y	FL/Y	FL/Y	FL/Y	FL/Y	FL/R	FL/R	FL/R	DARK	DARK	



PHASE CHARTS



WIRING DIAGRAM

CENTURY ENGINEERING, INC.
CONSULTING ENGINEERS - PLANNERS
32 WEST ROAD
TOWSON, MARYLAND 21204

APPROVALS		REVISIONS		MDOT - STATE HIGHWAY ADMINISTRATION <i>Office of Traffic & Safety</i> TRAFFIC ENGINEERING DESIGN DIVISION SIGNAL # 16045004.69					
CHIEF, DESIGN SECTION		1 5-13-91 AS BUILT AND MODIFY SIGNAL EQUIPMENT DUE TO REALIGNMENT OF MEDIAN SHA 538-802-312		DRAWN BY: _____		MD 450 AND I-95 SB RAMPS		STD. NO.:	
ASST. DISTRICT ENGINEER, TRAFFIC		2 C I-95 MODIFY SIGNAL EQUIPMENT DUE TO CONSTRUCTION OF I-95 SB OFF RAMP "A" SHA P 161-501-376		DES. BY: _____		COUNTY: PRINCE GEORGES			
CHIEF, TRAFFIC ENGINEERING DESIGN DIVISION		RWI		CHK. BY: _____		DATE: 6-15-73		F.A.P. NO. U-931-1(2)	
DEPUTY CHIEF ENGINEER, TRAFFIC				SCALE: NONE		S.H.A. NO. 420-000-385		FILE NO.: 953GI	
								SHEET NO. TS-2 OF TS-2	